Apparent Temperature

Abstract:
   This document details the code format used for daily values of maximum and minimum apparent temperature from first-order observation stations in the U.S.A.
   Apparent temperature (AT), invented in the late 1970s, was designed to measure thermal sensation in indoor conditions, but was extended in the early 1980s to include the effect of sun and wind. The AT used here is based on a mathematical model of an adult, walking *outdoors*, in the shade (Steadman 1984). The AT is defined as; the temperature, at the reference humidity level, producing the same amount of discomfort as that experienced under the current ambient temperature and humidity.

$$AT = -1.3 + 0.92T + 2.2e$$

   Where T is the ambient temperature in degrees Celcius and e is the vapor pressure in kPa.
   Hourly weather observations from first-order stations include ambient temperature, dew point temperature and atmospheric pressure. The latter two variables can be used to calculate water vapor pressure.

Steadman, R.G. 1984, A Universal Scale of Apparent Temperature, *J. App. Met*, **23**, 12, pp 1674

Format:

	Element	Width	Position
001	RECORD TYPE (= DLY)	3	001-003
002	STATION ID	8	004-011
003	METEOROLOGICAL ELEMENT TYPE	4	012-015
004	MET. ELEMENT MEASUREMENT UNITS CODE	2	016-017
005	YEAR		
006	MONTH	4	018-021
007	FILLER (= XXXX)	4	024-027
008	NUMBER OF DATA PORTIONS THAT FOLLOW	3	028-030
Variable length portion			
009	DAY OF MONTH	2	031-032
010	HOUR OF OBSERVATION	2	033-034
011	SIGN OF METEOROLOGICAL ELEMENT VALUE	1	035
012	VALUE OF METEOROLOGICAL ELEMENT	5	036-040
013	BLANK	1	041
014	QUALITY CONTROL FLAG 2	1	042
Repeat data groups for each day of month as elements 9 - 14			

001 Record type (always DLY)
002 Station ID. Five digit WBAN station ID prefixed with ‘000’
003 Meteorological element type:
ETMX indicates apparent (effective) temperature maximum
ETMN indicates apparent (effective) temperature minimum

004 Element measurement units:
‘F ‘ (whole degrees Fahrenheit)
005 Year
006 Month
007 Filler
008 Number of data portions to follow (usually number of days in the month)

The following elements are repeated for each data portions
009 Day of month
010 Hour of maximum or minimum apparent temperature value (99 if missing)
011 Sign of maximum or minimum AT value
012 Maximum or minimum AT value (99999 if missing)
013 Blank
014 Quality Control flag (either ‘9” for missing or ‘0’ for good)